

## **Prevalence of Dental Treatment Among Pediatric Patients During Covid-19**

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### **Abstract**

**Introduction:** Pediatric dental care was temporarily suspended during the COVID-19 pandemic, which affected dental needs of the pediatric age group. This retrospective study was done to see the prevalence and management of pediatric dental treatments during COVID-19 lockdown from March to July in 2020.

**Materials and Methods:** The records of Pediatric dental procedures done during the lockdown were collected and were categorized into four categories-emergency, preventive, restorative, elective. Analysis was performed using SPSS software by IBM, Chi-square test was done and statistical significance was set at 0.005%.

**Results and discussion:** Totally 1080 children were treated during COVID-19 lockdown, and 1502 procedures were performed, of which 20 % were emergency, 42 % restorative, 24% preventive and 12% elective.

**Keywords:** COVID-19, SARS-CoV 2, lockdown, elective procedures, aerosols, pediatric, innovative study, screening

## Introduction

Coronavirus disease 2019 (COVID-19) has impacted the delivery of healthcare systems throughout the world. Pediatric patients pose a unique challenge in this pandemic situation as they don't understand the COVID-19 safety protocols such as social distancing and personal hygiene measures. Due to the risk of transmission of COVID-19 between patients and dental staff routine dental care was affected among all other medical services. Some dental procedures produce aerosol which increases the risk of transmission. So almost all the countries had posed restrictions towards almost all the dental procedures[1]. The Indian government enforced a nationwide lockdown from the third week of March till June 2020, and the government of Tamil Nadu further extended the lockdown in the state to July 2020 to prevent the spread of COVID-19.

Impact of COVID-19 especially on children has been mild and of less severity. Pediatric COVID-19 positive cases in India have been relatively low[2][1]. Till June 5th, only 1506 positive cases below the age of 12 years were reported in Tamil Nadu and in the month of October, the total positive pediatric cases had risen to 25,073(<https://www.thehindu.com/news/national/tamil-nadu/covid-19-cases-continue-to-fall-in-tamil-nadu/article32896602.ece>). From this study we can understand that there was a sharp rise in the number of pediatric positive cases in the span of 5 months. Furthermore, in another study it was seen that children are key superspreaders of SARS-CoV-2 and they enhance the risk of transmission[3][4]; Indian council of medical research(ICMR) had also reported children to be the super-spreaders of COVID-19.

Pain of dental origin and other dental ailments negatively impacted the overall quality of life of children during the COVID-19 lockdown. Poor oral health is very frequent among school going children in Tamil Nadu and the prevalence of dental caries among 12–15-year-olds is reported to be 61% [2] [5–7]; and among preschoolers it is 63% [8]. Hence, in this retrospective study we wanted to assess the prevalence of pediatric dental treatment done during the COVID-19 pandemic.

## Materials and Methods

**Study design:** A retrospective study

**Study setting:** case records of patients in a private dental institution in Chennai

**Inclusion and exclusion criteria:** All the patients under the age of 18 years who have undergone dental treatment from March, 2020 to July, 2020 were included in this study. Patients above the age of 18 years and patients below 18 years with incompletely filled case sheets, parents who were not willing for their child's treatment, and children treated under general anaesthesia (as no cases were posted under GA during COVID-19 lockdown) were excluded from analysis.

**Ethical approval:** The approval for this study was given by the ethical board of Saveetha Institute of Medical and Technical Sciences

**Statistical analysis:** Saveetha dental college and hospital manages its patients' data using the dental information archival system (DIAS). Data was extracted, and treatments were categorized for each patient based on the ADA classification/nature of treatment and entered into an excel sheet; and data was randomly checked at regular intervals for

accuracy to verify veracity and avoid errors. Data was analyzed using SPSS V28 (IBM, IL, CH) and the dental procedures performed during COVID-19 lockdown. The level of statistical significance was set at 0.005%.

## Results and discussion

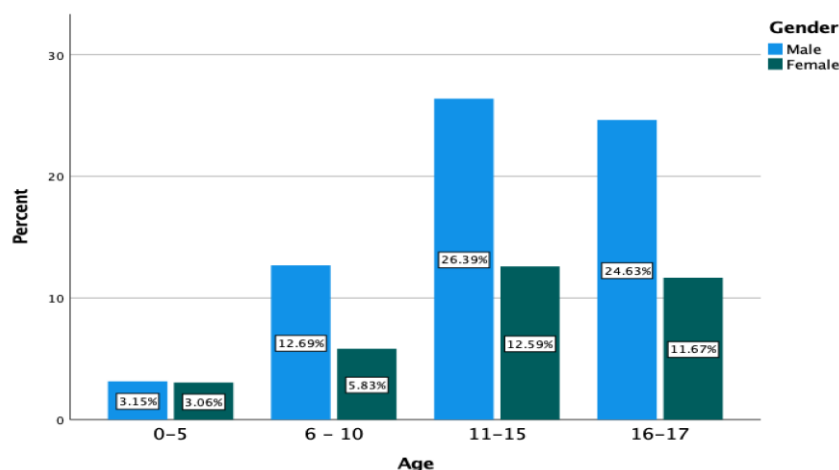


Figure 1: Bar graph showing frequency distribution of gender among various age groups. X-axis represents the different age groups and Y-axis represents the percentage of pediatric patients who underwent dental treatment, where blue denotes male and green denotes female patients.

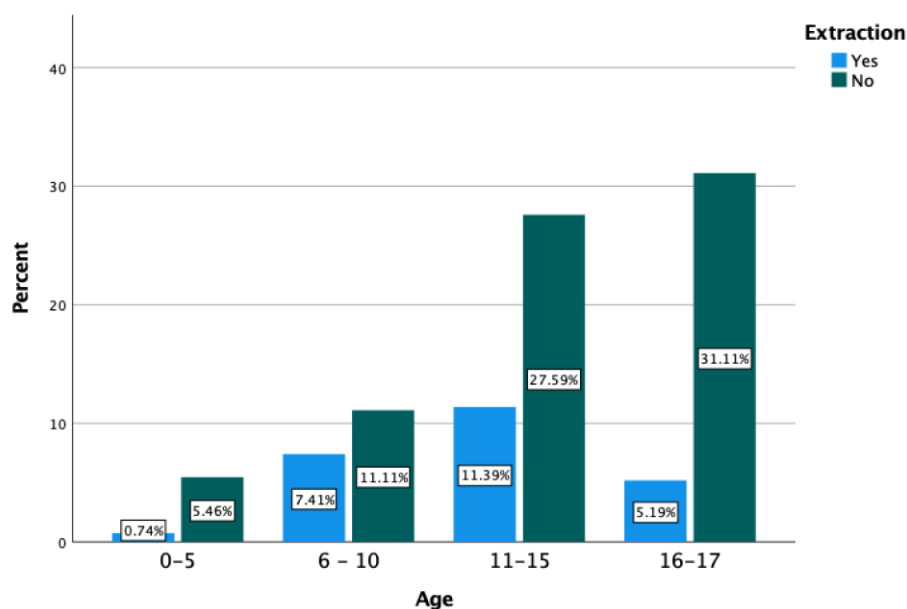


Figure 2: Bar graph represents the association between age group and extractions done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents the percentage of pediatric patients who underwent extraction, where blue colour denotes yes and green colour denotes no extraction was done. Chi-square test was done and association was found to be statistically significant (p value: 0.001).

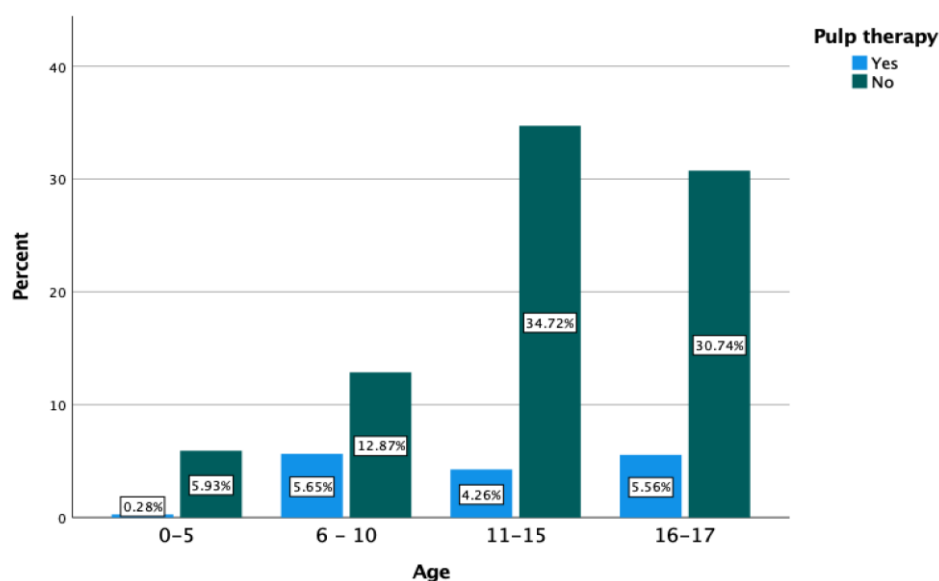


Figure 3: Bar graph represents the association between age group and pulp therapy done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents the percentage of patients who underwent pulp therapy, where blue colour denotes pulp therapy done and green colour denotes no pulp therapy was done. Chi-square test was done and association was found to be statistically significant (p value:0.001).

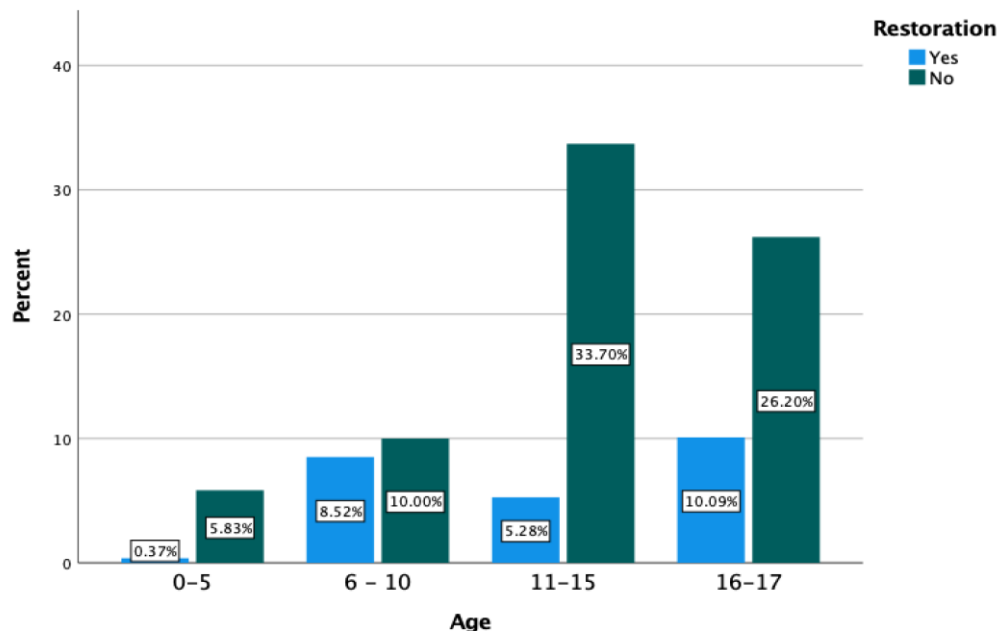


Figure 4: Bar graph represents the association between age group and restoration done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents percentage of pediatric patients who underwent restoration where blue colour denotes restoration was done and green colour denotes no restoration was done. Chi-square test was done and association was found to be statistically significant (p value:0.001).

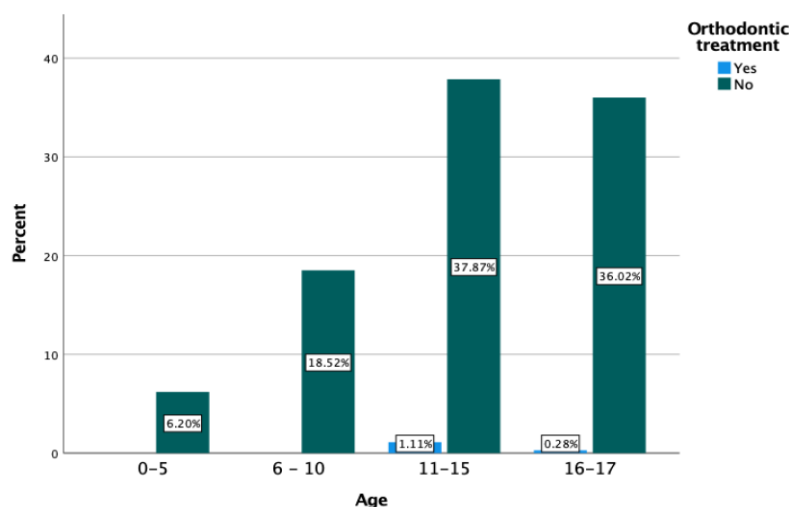


Figure 5: Bar graph represents the association between age group and orthodontic treatment done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents percentage of pediatric patients who underwent orthodontic treatment, where blue colour denotes orthodontic treatment was undertaken and green colour denotes no orthodontic treatment was done. Chi-square test was done and association was found to be statistically insignificant (p value:0.010).

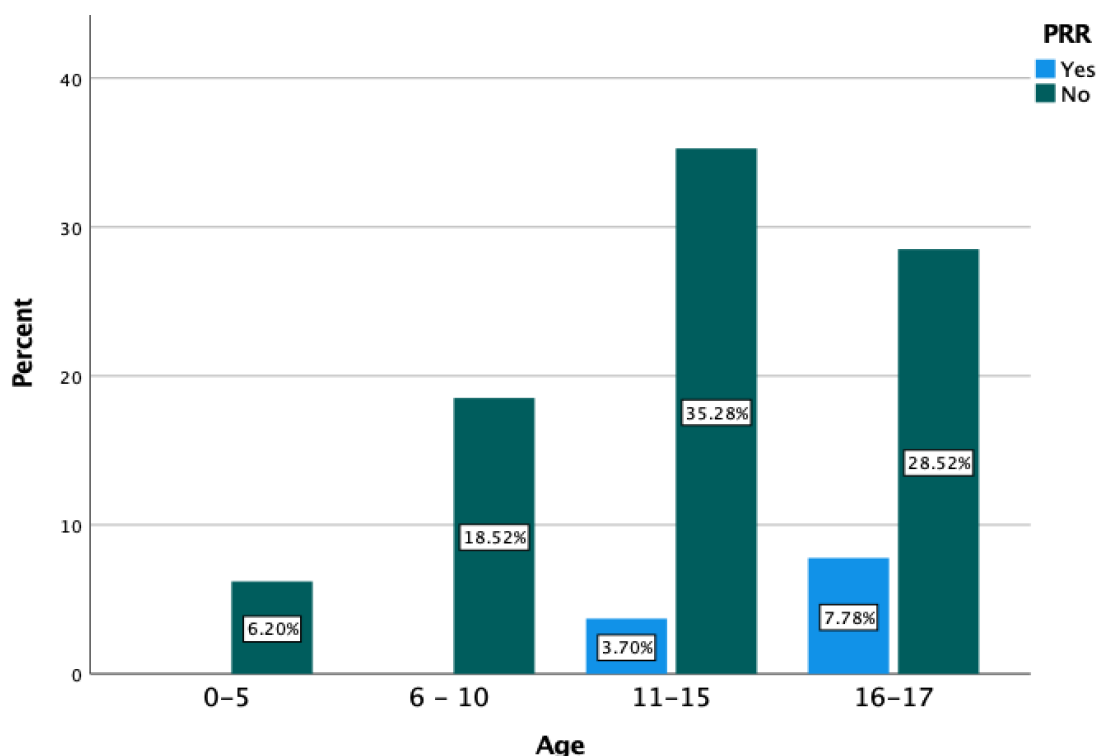


Figure 6: Bar graph represents the association between age group and Preventive Resin Restoration (PRR) done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents percentage of pediatric patients in whom PRR was done, where blue colour denotes PRR was done and green colour denotes no PRR was done. Chi-square test was done and association was found to be statistically significant (p value:0.001).

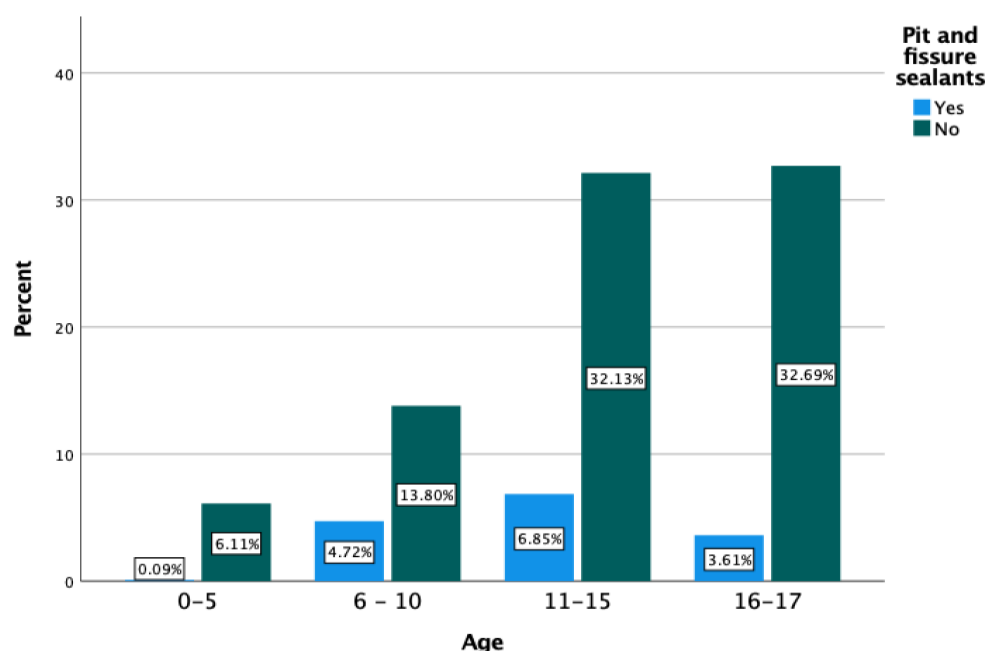


Figure 7: Bar graph represents the association between age group and Pit and fissure sealant done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents the percentage of pediatric patients who underwent pit and fissure sealant placement, where blue colour denotes pit and fissure sealant was done and green colour denotes no pit and fissure sealant was placed. Chi-square test was done and association was found to be statistically significant (p value:0.001).

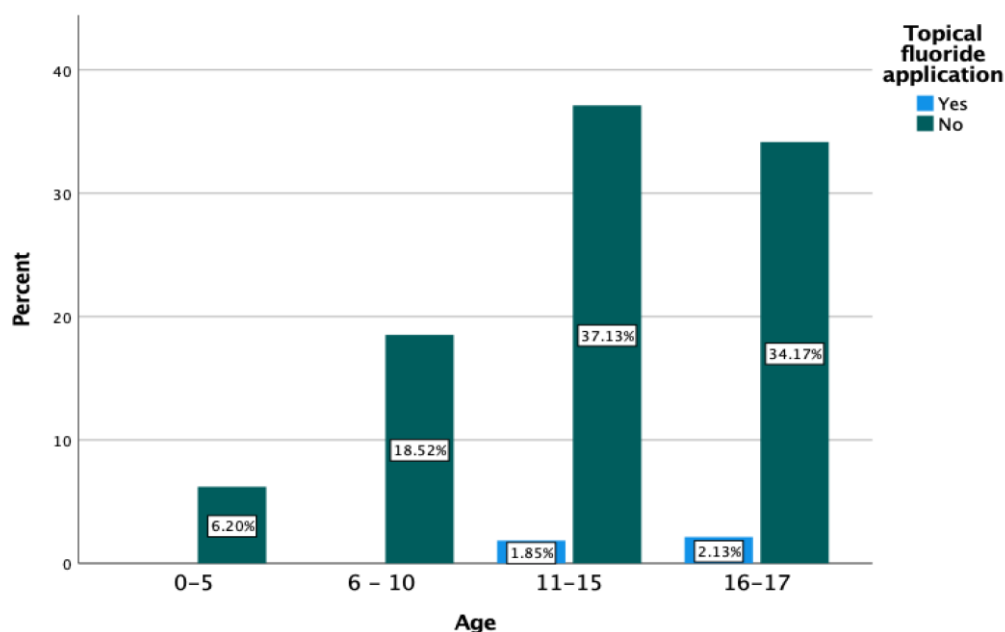


Figure 8: Bar graph represents the association between age group and topical fluoride applications done during COVID-19 lockdown period. X-axis represents the age group and Y-axis represents the percentage of pediatric patients who underwent topical fluoride applications, where blue colour denotes topical fluoride was applied and green colour denotes no topical fluoride application was done. Chi-square test was done and association was found to be statistically significant (p value:0.002).

In our study, we saw that pediatric patients in the age group of 11-15 years were highest in availing dental care, among this age group males were highest in number for getting dental treatments(26.39%) in comparison to females(12.59%). Similar results was also reported by another study done in Wuhan from February to March (59 days) [9]. However in another study it was reported that paediatric cases above the age of 16 years were more in number than any other age groups [10].

In our study we found that patients in the age group of 11-15 years underwent a higher number of extractions(11.39%) than any other age group. There was a statistical significance between extractions done and the age. The result of our study is consistent with other similar studies which reported the same results[8, 11]

In our study we saw that patients in the age group of 6-10 years underwent a higher number of pulp therapy(5.65%) than any other age groups. There was a statistical significance between pulp therapy done and age. Our finding was contradictory to a similar study which stated that pulp therapy was more frequently done in children above 15 years of age[12].

In our study we found that patients in the age group of 16-17 years underwent a maximum number of restorations(10.09%). There was a statistical significance between restorations done and age. Other studies also reported the same findings similar to our findings[8, 13]

In our study we found that patients in the age group of 11-15 years underwent a higher number of orthodontic treatment(1.11%) than any other age group.

In our study we found that patients in the age group of 16-17 years had undergone the maximum number of Preventive Resin Restoration (7.78%) and topical fluoride application(2.13%). 11-15 years had undergone the maximum number of pit and fissure sealants(6.85%), than any other age group. Similar findings were reported by other studies which took place during the same time period[11].

Dental treatments such as pulpectomy, pulpotomy and non-surgical root canal treatment were recommended as non-urgent dental care during the pandemic, but our institute recommended continuation of these procedures and provided strict following of universal precautions for COVID-19. Evidence based reports have recommended the use of medication as first choice for home management of dental pain among children[4][14]. None of the children were tested for COVID-19 status prior to treatment as the test was expensive, time consuming, and parents were unwilling. Dental pain in children can worsen the quality of life of a child, especially during the pandemic. When normal children can experience emotional distress during the pandemic (Jiao et al., 2020), painful conditions would only exacerbate the mental distress experienced by the child. Moreover, the child's dental condition would have affected the entire family as all were restricted inside their homes in a fragile emotional state due to the nation-wide lockdown (Samuel et al., 2020a).

Our institutional COVID-19 protocol for pediatric management was almost similar to the one released by ADA; thus, we adopted the guidelines as soon as it was released, and reported the same. The number of procedures performed in 2019 and 2020 correspond to each other with respect to restorative, preventive and elective procedures, and only emergency procedures increased during the pandemic. Sadly, we cannot compare our findings with other studies as there are no previous reports of treatment provided to pediatric cases during the pandemic. The merits of our study involve the conduct of dental treatment during the COVID-19 pandemic when the whole world was afraid to alleviate dental pain and suffering, and we are the first to report the same. Secondly, use of electronic data management for routine patient care improves the reliability and validity of the data acquired, and further reduces direct/indirect contact while collecting data to a certain extent. Thirdly, accurate diagnosis was possible through clinical examination and x-ray evaluation to avoid misclassification as emergency or non-emergency care. The results of our study also provide some insights into the various dental problems encountered by children, the various procedures performed during the lockdown. This information could further mitigate the fear and ambiguity towards provision of oral care to children suffering from dental pain during a pandemic with appropriate necessary precautions. However, our study has some limitations as we were not able to follow-up the children to enquire regarding the COVID-19 status following treatment in a tertiary care institute. The study reports the findings only among pediatric cases, and cannot be generalized to the adult population. Moreover,

the severity of COVID-19 is varied in each country hence, their provincial dental regulatory authority should exercise appropriate caution when initiating full-fledged dental treatments.

## Conclusion

We can conclude from this study that the number of paediatric patients seeking for dental treatment was much less in number during the COVID-19 pandemic time. Dental treatment can be done with proper precautions and safety protocols. Awareness and motivation has to be given for both the patients and their parents.

**Conflict of interest:** None to declare.

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